

CLAIMS

1. A liquid crystal display panel that includes a first substrate, a second substrate, a liquid crystal layer encapsulated between the first substrate and the second substrate, display electrodes provided on the first substrate, and opposed electrodes provided on the second substrate, and in which overlapping portions of the display electrodes and the opposed electrodes are formed as pixel portions, comprising:
- 5 a moving image display area in which the pixel portions are arranged in a matrix shape;
- 10 a pictogram display area in which the pixel portions are formed in a fixed pictogram shape;
- first protective elements, for protection against static electricity, that are inserted between the respective pixel portions in the moving image display area and a drive circuit for the pixel portions and
- 15 arranged in an outer periphery of the moving image display area; and
- second protective elements, for protection against static electricity, that are inserted between the respective pixel portions in the pictogram display area and a drive circuit for the pixel portions and
- arranged in an outer periphery of the pictogram display area.
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2. The liquid crystal display panel according to claim 1, wherein
- the first protective elements and the second protective elements make a resistance variable according to the static electricity to reduce static electricity that is generated in at least one of the pixel portions
- 25 and wiring portions thereof, and

the first protective elements are connected to one another by a first common electrode, and the second protective elements are connected to one another by a second common electrode.

5 3. The liquid crystal display panel according to claim 2, wherein
the first common electrode and the second common electrode
are constituted by an identical common electrode.

4. The liquid crystal display panel according to claim 1, wherein
10 the pictogram display area includes
a pictogram display electrode having a shape of a fixed
pictogram; and

a pictogram display surrounding electrode that is
two-dimensionally adjacent to the pictogram display electrode with a
15 predetermined gap between the pictogram display electrode,

uniform variable density display is made possible over
substantially an entire surface of the pictogram display area by the
pictogram display electrode and the pictogram display surrounding
electrode, and

20 the pictogram display electrode and the pictogram display
surrounding electrode are connected to each other via the second
protective elements in the outside of the pictogram display area.

5. The liquid crystal display panel according to claim 4, wherein
25 the moving image display area, in which the pixel portions are

arranged in a matrix shape, includes first switching elements connected to the respective pixels, and in the pictogram display area, the respective pictogram display electrodes are connected to the drive circuit via the second protective elements without the intervention of

5 the first switching elements.

6. The liquid crystal display panel according to claim 1, wherein the first protective elements and the second protective elements are constituted by connecting at least two second switching elements in
10 a ring shape and connecting at least one of the second switching elements in series.

7. The liquid crystal display panel according to claim 6, wherein the second switching elements are thin-film transistors
15 consisting of an amorphous silicon film or a poly crystal silicon film.

8. The liquid crystal display panel according to claim 1, wherein the opposed electrodes provided on the second substrate are provided separately in the moving image display area and the
20 pictogram display area.

9. The liquid crystal display panel according to claim 8, wherein the first protective elements connected to the respective pixel portions in the moving image display area are connected to the
25 opposed electrodes that are provided to be opposed to the moving

image display area, and the second protective elements connected to the respective pixel portions in the pictogram display area are connected to the opposed electrodes provided to be opposed to the pictogram display area.

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10. The liquid crystal display panel according to claim 1, wherein a color filter is provided on the second substrate, and the display electrodes are reflecting electrodes or semi-transmission reflecting electrodes.

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11. A liquid crystal display panel that includes a first substrate, a second substrate, a liquid crystal layer encapsulated between the first substrate and the second substrate, display electrodes provided on the first substrate, and opposed electrodes provided on the second

15 substrate, and in which overlapping portions of the display electrodes and the opposed electrodes are formed as pixel portions, comprising:

a moving image display area in which the pixel portions are arranged in a matrix shape; and

a pictogram display area in which the pixel portions are formed

20 in a fixed pictogram shape, wherein

plural pictogram display electrodes constituting the pictogram display area are wired to the outside of the pictogram display area by respective pictogram display wiring electrodes, and the respective pictogram display wiring electrodes are arranged in parallel to one

25 another in the pictogram display area.

12. The liquid crystal display panel according to claim 11, wherein
a pictogram display surrounding electrode, which is
two-dimensionally adjacent to the pictogram display electrode with a
5 predetermined pictogram surrounding gap between the pictogram
display electrode and the pictogram display surrounding electrode, is
further formed in the pictogram display area, and widths of the
pictogram display wiring electrodes are narrower in the pictogram
surrounding gap than other areas.

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13. A liquid crystal display panel that includes a first substrate, a
second substrate, a liquid crystal layer encapsulated between the first
substrate and the second substrate, display electrodes provided on the
first substrate, and opposed electrodes provided on the second
15 substrate, and in which overlapping portions of the display electrodes
and the opposed electrodes are formed as pixel portions, comprising:
a moving image display area in which the pixel portions are
arranged in a matrix shape;

a pictogram display area in which the pixel portions are formed
20 in a fixed pictogram shape; and

a partitioning line that divides the moving image display area
and the pictogram display area.

14. The liquid crystal display panel according to claim 13, wherein
25 the pictogram display area includes pictogram display wiring

electrodes that wire the pictogram display electrode provided in the area to the outside of the pictogram display area, and the pictogram display wiring electrodes are arranged in an area in which the partitioning line is formed.

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15. The liquid crystal display panel according to claim 13, wherein the partitioning line is constituted by a first partition wiring formed on the first substrate and a second partition wiring formed on the second substrate with a liquid crystal layer between the second
10 substrate and the second partition wiring.

16. The liquid crystal display panel according to claim 13, wherein the partitioning line includes at least one of an area in which color filters of at least two colors are laid one on top of another and a
15 black matrix area.

17. The liquid crystal display panel according to claim 13, wherein the partitioning line is an area with a reflectance lower than that of at least one of the moving image display area and the pictogram
20 display area.

18. A liquid crystal display panel that includes a first substrate, a second substrate, a liquid crystal layer encapsulated between the first substrate and the second substrate, display electrodes provided on the
25 first substrate, and opposed electrodes provided on the second

substrate, and in which overlapping portions of the display electrodes and the opposed electrodes are formed as pixel portions, comprising:

a moving image display area in which the pixel portions are arranged in a matrix shape; and

5 a pictogram display area in which the pixel portions are formed in a fixed pictogram shape, wherein

pictogram display electrode forming the pictogram display area are connected to a third switching elements provided outside the pictogram display area via pictogram display wiring electrodes.

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19. The liquid crystal display panel according to claim 18, wherein the third switching element is provided between the pictogram display area and a seal portion that seals the first substrate and the second substrate.

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20. The liquid crystal display panel according to claim 18, wherein second protective elements, for protecting against static electricity, are provided in two places on the pictogram display area side and an opposite side of the pictogram display area with respect to
20 the third switching element.

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21. A liquid crystal display panel that includes a first substrate, a second substrate, a liquid crystal layer encapsulated between the first substrate and the second substrate, display electrodes provided on the
25 first substrate, and opposed electrodes provided on the second

substrate, and in which overlapping portions of the display electrodes and the opposed electrodes are formed as pixel portions, comprising:

a moving image display area in which the pixel portions are arranged in a matrix shape;

5 a pictogram display area in which the pixel portions are formed in a fixed pictogram shape;

first switching elements that are arranged in the moving image display area and connected to respective pixels in the moving image display area; and

10 protrusions for easing non-uniformity of a thickness of a liquid crystal layer in the moving image display area and a thickness of a liquid crystal layer in the pictogram display area due to the first switching elements that are arranged in the pictogram display area and arranged in the moving image display area.

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22. The liquid crystal display panel according to claim 21, wherein the protrusions arranged in the pictogram display area are formed by a part of the first switching elements arranged in the moving image display area.

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23. The liquid crystal display panel according to claim 21, wherein a height of the protrusions arranged in the pictogram display area is not less than half of to equal to a height of the first switching elements arranged in the moving image display area.

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24. The liquid crystal display panel according to claim 21, wherein
a height of the protrusions arranged in the pictogram display
area is the same as a height of the first switching elements arranged in
the moving image display area.

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25. The liquid crystal display panel according to claim 21, wherein
an area of the protrusions arranged in the pictogram display
area is substantially the same as an area of the first switching elements
arranged in the moving image display area.

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26. The liquid crystal display panel according to claim 25, wherein
a distribution of the protrusions arranged in the pictogram
display area is substantially the same as a distribution of the first
switching elements arranged in the moving image display area.

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27. A liquid crystal display panel that includes a first substrate, a
second substrate, a liquid crystal layer encapsulated between the first
substrate and the second substrate, display electrodes provided on the
first substrate, and opposed electrodes provided on the second

20 substrate, and in which overlapping portions of the display electrodes
and the opposed electrodes are formed as pixel portions, comprising:

a moving image display area in which the pixel portions are
arranged in a matrix shape;

25 a pictogram display area in which the pixel portions are formed
in a fixed pictogram shape;

first switching elements that are arranged in the moving image display area and connected to respective pixels in the moving image display area; and

a light shielding black matrix that forms a pattern, which
5 surrounds respective pixels arranged in a matrix shape, in the moving image display area and forms the same pattern as that in the moving image display area in the pictogram display area.

28. The liquid crystal display panel according to claim 27, wherein
10 the pictogram display area includes a pictogram display electrode having a shape of a fixed pictogram and a pictogram display surrounding electrode that is two-dimensionally adjacent to the pictogram display electrode with a predetermined gap between the pictogram display electrode and the pictogram display surrounding
15 electrode, and

the black matrix in the pictogram display area is cut out in the gap between the pictogram display electrode and the pictogram display surrounding electrode.

20 29. A liquid crystal display panel that includes a first substrate, a second substrate, a liquid crystal layer encapsulated between the first substrate and the second substrate, display electrodes provided on the first substrate, and opposed electrodes provided on the second substrate, and in which overlapping portions of the display electrodes
25 and the opposed electrodes are formed as pixel portions, comprising:

a moving image display area in which the pixel portions are arranged in a matrix shape;

a pictogram display area in which the pixel portions are formed in a shape of a fixed pictogram by plural individual display electrodes
5 arranged in a matrix shape, and two or more individual display electrodes are electrically connected via coupling portions; and

first switching elements that are arranged in the moving image display area and connected to respective pixels in the moving image display area.

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30. A liquid crystal display panel that includes a first substrate, a second substrate, a liquid crystal layer encapsulated between the first substrate and the second substrate, display electrodes provided on the first substrate, and opposed electrodes provided on the second
15 substrate, and in which overlapping portions of the display electrodes and the opposed electrodes are formed as pixel portions, comprising:

a moving image display area in which the pixel portions are arranged in a matrix shape;

a pictogram display area in which the pixel portions are formed
20 in a shape of a fixed pictogram by plural individual display electrodes with different shapes arranged in a matrix shape, and the respective individual display electrodes are connected to drive circuits individually via respective pictogram display wiring electrodes; and

first switching elements that are arranged in the moving image
25 display area and connected to respective pixels in the moving image

display area.